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ABSTRACT

While verbal language has traditionally determined our view of intelligence, this limited view ignores other systems for expressing intelligent thought. An expanded concept of language considers verbal language as one part of a mental modeling system, or internal representation, for any kind of sensory information available to us, visual or auditory. Media are the tools humankind has created for the concrete expression of the abstract processes of the brain. Verbal language has been the major tool for externalizing or mediating intelligence, but the proliferation of new media points to the use of other forms of intelligence: pictorial, mathematical, musical, and kinesthetic. Language can be defined as the sum of the modeling systems available to us. This expanded view of intelligence assumes an expanded view of language as a medium for expressing mental activity. By learning other media "languages" we can understand verbal language better. Research in diverse areas of language and intelligence supports this perspective of intelligence and language, and this new perspective can enhance language learning research, allowing language learning to embrace new communication media as tools to enhance the expansion of intelligence. (MSE)

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Redefining Language Learning

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Redefining Language Learning

Verbal language, more than anything else, determines our view of intelligence; this is evident in the power of verbal language IQ tests to determine the fate of those who desire jobs and education. However, such a limited view of intelligence neglects the new media that are tantamount to verbal language as systems for expressing intelligent thought.

Language and intelligence, or thinking, are intricately connected, language being--from one perspective--a record of thinking. Sometimes that record is made primarily to communicate ideas to another reader, or it may be a more personal process of working out one's own thoughts to understand them better. Traditionally verbal language has been considered to be so closely related to thinking that some have said language IS thinking. But this is much too narrow a view of thinking. This too-narrow view of the relationship between thinking and language limits our recognition of and consequently our development of intelligence in its broad sense. I hope to communicate an expanded view of language and intelligence in this article.

Traditionally intelligence has been closely related to verbal language ability. Most IQ tests are tests of verbal language ability. Even the understanding of the test itself is mediated through verbal language; instructions for most (all?) tests are

issued through spoken or written verbal language. Language has been so closely tied to intelligence that we have come to consider intelligence to be almost synonymous with verbal language skills.

To begin to expand our concept of language, I turn to look at speculations about the origin of language. One view is that language has its roots in human evolution as a modeling system: that instead of beginning as a mode of communication between humans, language might instead have begun as a way to represent something mentally to the self (Sebeok). For instance, early humans might have discovered the ability to make a sound, and then to use that sound to stand for, or represent, something in their own knowledge. Subsequently, from this kind of modeling ability in the self, the conceptual leap of communicating with others might have been conceived.

Whether this speculation is true or not we will probably never know. In any case, the idea of a modeling, or internal representation, system is provocative: that language is a way of representing internally--inside our minds--ideas and objects from the world outside ourselves. (Or for that matter, events taking place inside our bodies such as pain or the thinking that is going on in our minds. We can be aware of our own thoughts as new information.) Imagine what happens in your mind when you think in language--you "hear" the words in your mind's ear, just as you can "see" things in your mind's eye. The brain's language

processing ability constitutes an internal model, or internal representation, of a concept created, for instance, in the hearer's mind of a spoken word. Think of hearing someone speak the word red. What do you experience mentally? Through the span of time each of us has been alive, we have built up a huge repertoire of experience related to a word; when we hear a word spoken we have an instant representation--almost like a reflex--in our consciousness of the accumulated meaning attached to the particular sound that forms a word. Our mind equips us with this modeling system for presenting and re-presenting information to ourselves.

Verbal language works as a part of that mental modeling system. Language has been developing for such a long time and has become so embedded in our culture that it does seem to be thinking itself. Perhaps it has been so very successful as a communication tool because it is easily accessible and very portable: each of us carries vocal chords as a part of our anatomy--we come equipped with the tools for spoken verbal language as hereditary baggage. Language is a tool that extends our mental processes outside ourselves to make them known to others (communication), or that we can use to represent our own ideas to ourselves and thus come to understand them better. Virtually everyone learns to speak, making language a universal human ability, one some have considered so important as to be the major factor distinguishing human beings from other animals.

However, with the advent of new media like photography in the mid-nineteenth century, we have begun to see how new media operate in much the way that language does. Though visual art is at the root of visual communication--and it is ancient, perhaps even older than verbal language--we couldn't see its correspondence with language until technology was developed to make picturing-as-a-mode-of-communication accessible to more people. Now with the ease of, say, the polaroid camera, expression through pictures is almost as convenient as verbal language. Photography makes us see that pictures are another system we have for thinking; pictures express the kind of information we find modeled in our visual mental imagery. Photography and the visual arts comprise external representations of what is modeled in the mind's eye, the visual representation system of the brain.

We are equipped with a brain that provides a modeling system, or internal representation system, for any kind of sensory information that is available to us. Our two most important language or modeling systems are related to the auditory and visual senses--spoken language dependent upon the auditory sensory system, and art representing the visual sensory system, as does printed verbal language, which enters our mind visually just as pictures do.

The point I want to make here is that verbal language is not the only mode of modeling or representing ideas; instead, any

extensions of the senses provided by the new media are important as mental tools. And therefore as modes of intelligence. Thus we should use them all--not just verbal language--to develop and measure our intelligence. I propose that the computer, as a representative of new media, is an important tool for cultivating several of these abilities: both spoken and written verbal language, mathematics (which is also considered to be a "language"), as well as visual and sound representation (visual arts and music). The computer makes writing easier than ever before because it accommodates revising, correcting, and printing out new drafts of our writing; it replaces the statical nature of the printed page with the fluidity of electricity. And in terms of spoken language, progress is rapidly being made toward creating computers that can respond to spoken language commands or "read" printed language. The computer also serves as the tool for creating visual and musical communications; and, of course, it is a whiz at mathematics, the original use of this magic machine.

Let's look for a moment at the role of media in intelligence. Media are the tools humankind has created for the concrete expression of the abstract electro-chemical processes going on in the brain, which we ultimately call intelligence. Verbal language has played such a comprehensive role in the concept of intelligence and the measurement of it because the human speech apparatus has been the major tool for externalizing, or mediating, intelligence. However, the proliferation of new media

points up the use of other forms of intelligence: thinking takes place in pictorial, mathematical, musical and kinesthetic modes of intelligence as well.

In Frames of Mind, a theory of multiple intelligences, psychologist Howard Gardner (1983) proposes that the different media reflect the performance and ordering of the different kinds of intelligence. Gardner's theory of multiple intelligences includes linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, as well as inter- and intra-personal intelligences. He believes that at the core of each of these intelligences is an information-processing device "which is unique to that intelligence and upon which are based the more complex realizations and embodiments of that intelligence" (p. 278). Each particular intelligence is outwardly embodied in its medium. For instance, the medium of linguistic intelligence is verbal language. Likewise, each of the other intelligences Gardner mentions is embodied in a medium: bodily-kinesthetic intelligence, for instance, is represented by dance, acting, sports, etc. Gardner's work, along with others, notably J. P. Guilford who made at least 120 classifications of types of intelligence, prods us to reconsider the limited concept of intelligence embodied in our accepted forms of I.Q., which almost exclusively define it as linguistic and, to a somewhat lesser extent, mathematical ability.

All of these media abilities can be seen as "language" abilities

in the broad, or expanded sense of being modeling systems. I propose that language can be defined in a general way as the sum total of modeling systems available to us. Modeling systems serve to represent information inside the mind; and throughout history humankind has discovered and invented media for the external expression of these mental representations. Media, beginning with the human vocal cords as the medium of spoken language, form the external tools for expressing and subsequently further developing intelligence. They also form the basis for communication within ourselves to our selves. Therefore, the use and development of multiple media can help us expand our intellectual capacity.

An expanded view of intelligence implies an expanded view of language also, language being in its abstract definition a medium for expressing mental activity. Thus other media extensions offer the same capability as verbal language. Expanded forms of intelligence will be developed by those who have the advantage of the technology and education, and others will be left at a substantial disadvantage for sharing in the intelligent communications of the culture, which are changing as a result of the proliferation of new communications media.

In order to come to grips with the changing communications and new views of intelligence in our culture, we as English educators must look at our field in a larger context. In the early 1900's the linguist Ferdinand de Saussure (1966) proposed just such a

context in the field of study that he called semiology, based on the study of signs. Language, he says, is the most important of the sign systems, and we learn the general nature of signs from our study of language. However, language must take its place in the context of the larger study of signs and sign systems: "If we are to discover the true nature of language we must learn what it has in common with all other semiological systems" (p. 17). Thus linguistics, or language study, is the vehicle through which we discover the nature of signs, but we must apply this notion of signification we have learned from language to other sign systems in our culture. Saussure's work gives us the framing context for studying all cultural communication systems (including the new media) in the light of their functions as signs signifying some meaning. It is from Saussure's work that I derive the expanded definition of "language" as the study of all sign systems that are used in our culture for communication. In the modern field of semiotics that has grown from Saussure's concept, semiotician Thomas Sebeok has proposed the term semiosis to denote the study of the broad process of communication.

Analysis of a phenomenon in its larger context produces deeper understanding. Thus it follows that by learning other media "languages" we understand verbal language better, just as we understand verbal language better if we learn a foreign language. Or, similarly, compare how we can understand our own culture better by stepping outside it to gain perspective; then we can apply that knowledge of how to look at culture to our own

culture when we reenter it. By studying the nature of communication in general, we double back to learn more about verbal language. Likewise, if we also learn more about another mental representation system--picturing, for instance--we can see it as a mode of communication, or as an example of "language", and we will then be able to understand other modes of communication better because we study a new one.

Perhaps an interesting example of expanded "language" is to consider the "language" of the brain: the way the brain works, or the mode of communication within our bodies that is ultimately our quality of intelligence. The language of the brain is the underpinnings of intelligence; we must explore its nature in order to understand intelligence. Of interest to English educators are neuropsychological studies exploring language development and language behavior as ways of looking inside the brain to decipher its "language."

In particular, Jean Luc Nespoulous (1984a) and [illegible]eam of researchers in Montreal are studying the language behavior of patients who have suffered brain damage (such as strokes or accidents) to the specific areas of the brain identified as language centers. By studying brain-damaged patients, they hope to observe the effects when a part of the brain does not function. Though it has been well-established that two specific areas of the left hemisphere--Broca's and Wernicke's areas--are clearly language centers, the Montreal researchers are careful to

say that language ability does not reside wholly in these areas, as it is not clear exactly how many and which areas of the brain perform language operations.

An interesting finding by one of the team member's study of American Sign Language for the deaf is that even visually transmitted sign language seems to be processed in the same areas of the brain as spoken language. Though sign language is visual in nature--rather than auditory, as spoken language is--it too resides in the recognized linguistic centers of the brain. The Montreal researchers are excited by this finding because it generates data that can help us draw generalizations about language abilities. Also, through what they have learned about brain damaged patients, the researchers suggest that in some cases mental deficits might be at least partly counterbalanced and compensated for by alternative routes in the brain (Nespoulous, 1984b).

Through this work the Montreal researchers hope to discover the brain mechanisms related to language learning and development of more complex stages of language ability. Also, Nespoulous urges that language educators take into account the necessity of teaching language through different modes of learning--such as using the different sensory systems--in order to lateralize linguistic ability, or in other words to spread language learning to as many areas of the brain as possible. In this way more areas, and hopefully more different abilities, of the brain can

be engaged in language learning. Other media besides verbal language offer learning situations to exercise varied intellectual capacities.

Another way the "language"-of-the-brain point of view enhances language learning studies is through the analysis of language behavior as a psychological hook into how the brain is functioning. Jerome Bruner, one of the foremost thinkers in the field of cognitive psychology, has begun to focus his studies on analysis of children's language development. His most recent book Child's Talk is a report of observational case studies of children learning speech in interaction with their mothers; this material forms the data base for his philosophical approach to developmental abilities. He and his colleague Carol Feldman build a case for a pragmatic view of language learning: that language acquisition begins through the use of language between mother and child (Bruner and Feldman, 1984). Perhaps the message from psychologists Bruner and Feldman as well as the Montreal neurological research team is that the use of the brain in the myriad ways possible is essential to the development of that organ's capabilities. With vigorous use the brain can remain pliable and lively, even into old age. As language educators, we are beholden to devise teaching methods that integrate the active use of language into learning situations.

Reports of neurological research specifying more clearly the "language" of the brain are becoming more accessible to the

general reader, and this knowledge is beginning to mature sufficently for us to apply it to redefined language learning theory. If our redefinition of language learning takes into account an expanded concept of language, we can gain a broader understanding of verbal language within its larger context of communication systems in general. Then we are free to embrace new communication media as tools to enhance the creation of expanded intelligence.

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